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(54) SAFETY RAZOR BLADE UNIT

(71) We, GILLETTE INDUSTRIES LIMITED, a British Company, of Great West Road, Isleworth, Middlesex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

It is known that very satisfactory shaving results can be obtained by using a shaving system having tandem-acting, spaced, parallel cutting edges arranged to follow one another over the skin.

It would obviously be of great practical convenience if such a tandem-acting cutting edge shaving system could be constituted by inserting a disposable blade unit, presenting two pairs of such tandem-acting cutting edges, into a satisfactory razor frame which is the same as, or generally similar to, the frames commonly used with conventional double-edged disposable blades.

The present invention provides a disposable, tandem-acting multiple edge blade unit of the general character above referred to, which gives highly satisfactory shaving results when used in an appropriate razor and whose design is such as to allow of simple and economic manufacture.

In accordance with the invention a disposable elongated blade unit for a safety razor comprises a thin, transversely flexible blade which is apertured along its longitudinal centre line and has its two longitudinal edges parallel and sharpened to cutting edges, a pair of blade strips each having a length substantially equal to that of the blade and a width less than half that of the blade and each sharpened along one longitudinal edge only, and means securing the two blade strips to the blade with the blade strips lying in a plane parallel to but spaced from that of the blade and disposed symmetrically on opposite sides of the longitudinal centre line of the blade with their sharpened edges directed outwardly and extending parallel to the sharpened edges of the blade, the distance between the cutting edge of each blade strip and the longitudinal

centre line of the blade differing significantly from the distance between each cutting edge of the blade and the said centre line.

For optimum shaving results, the tandem-acting cutting edge blade units of the present invention should be used in a razor, the geometry of whose head differs somewhat from that of a razor designed for use with conventional double-edged blades. Such razors may be specially manufactured, but alternatively such a razor can be produced by attaching to a conventional safety razor frame a converter device which so modifies the razor head geometry as to render the razor fully suitable for use with the improved tandem-acting cutting blade units of the invention. Such a converter device forms the subject of co-pending application No. 34716/72.

A particular embodiment of the invention is, by way of illustrative example only, shown in the accompanying drawings and further described below.

In the drawings:

Figure 1 is a transverse sectional view of parts of a particular commercially available safety razor, designed for use with conventional double-edged razor blades, fitted with a tandem blade unit in accordance with the present invention and with a pair of converter devices of the character referred to above; and

Figure 2 is a plan view of the blade unit alone.

The safety razor, of which parts are shown in Figure 1, is a commercially available "one-piece" model, designed for use with conventional double-edged disposable blades having a single cutting edge formed on each of the two longitudinal edges of the blade. The razor includes a locating bar 7 for engaging in the slot formed on the longitudinal centre line of a conventional blade, a platform 8 on which the blade rests, a two-part cap 9 for clamping the blade against the platform, and a pair of guard members 10 for engaging the skin ahead of the respective cutting edges of the blade. The guard

members are fitted with converter devices 15 as described in Application No. 34716/72.

The improved disposable blade unit, shown in Figure 1 and separately in Figure 2, comprises a lower blade 11 constituted by a double-edged safety razor blade which is of conventional form and dimensions except that it has an overall width between its opposite cutting edges of from 0.925 to 0.950 inch, which is significantly greater than that of a conventional blade. Secured to the upper face of this blade in the positions indicated in the drawings are a pair of spacer strips 12, each from 0.008 to 0.020 inch in thickness. Secured to the upper face of each spacer member is an upper blade strip 13 having a single sharpened edge. The width of the blade strips 13 is not critical; a suitable width is, for example, 0.280 inch. These upper blade strips 13 may conveniently be produced by longitudinal slitting of conventionally manufactured blades similar to that constituting the lower blade 11. The parts 11, 12 and 13 are secured together by spot welding in a plurality of positions as indicated at 14. The cutting edge of each upper blade strip 13 is spaced inwardly from the corresponding cutting edge of the lower blade (measured in a plane parallel to the blades 13 and 11) by from 0.027 to 0.050 inch.

In an alternative embodiment of the blade unit according to the invention, the positions of the double-edged blade and the two single-edged blade strips are reversed, the upper cutting edges being provided by a double-edged blade of conventional shape and size so that it has an overall width between its cutting edges of from 0.860 to 0.868 inch, and the lower cutting edges being provided by two separate single-edged blade strips, the relative positions of the cutting edges and the manner of securing together the blade and the blade strips being otherwise as described for the illustrated embodiment. It will be appreciated that in this alternative embodiment of the invention the cutting edge of each blade strip projects outwardly beyond the adjacent cutting edge of the blade, that is the cutting edge of the blade strip lies at a greater distance, instead of at a lesser distance, from the longitudinal centre line of the blade than does the cutting edge of the blade itself.

The doubled-edged blade and the single-edged blade strips may be of conventional thickness, for example 0.004 inch, or may be thicker, for example up to 0.010 inch thick. The blade 11 and the blade strips 13 are shown in the illustrated embodiment as being of equal thickness, but they may be of different thicknesses and the combination of a thicker lower blade, for example 0.010 inch thick, and thinner upper blade strips,

for example 0.004 inch thick, is advantageous. 65

In the embodiment illustrated, the outer edge of the spacer is vertical to the blade 11 and the blade strip 13; other configurations of the spacer edge may, however, be used. In particular, it may be wedge-shaped in section tapering towards the cutting edge of the blade 11. In all cases the outer edge of the spacer should be sufficiently set back from the adjacent cutting edge of the blade 11 or the blade strip 13, as the case may be, so as not to overlap the facets of the cutting edge. Where the blade 11 and the blade strips 13 are 0.004 inch thick, the spaced edge should be spaced inwardly from the adjacent cutting edge by at least 0.020 inch and the inward spacing of the spacer edge from the cutting edge of the blade 13 is preferably from 0.020 to 0.030 inch. A greater spacing will usually be required for thicker blades and blade strips. 70 75 80 85

The spacers 12 may be formed of metal or plastics. If formed of metal, they preferably have the same or a similar composition to the steel of which the blade 11 and the blade strips 13 are formed, for example stainless steel. When the spacers 12 are formed of metal, the parts 11, 12 and 13 are preferably secured together by spot welding, as described above for the illustrated embodiment, and when the spacers are formed of plastics, the parts 11, 12 and 13 are preferably secured together with adhesive which should, of course, be water-resistant. 90 95 100

WHAT WE CLAIM IS:—

1. An elongated disposable blade unit for a safety razor comprising a thin, transversely flexible blade which is apertured along its longitudinal centre line and has its two longitudinal edges parallel and sharpened to cutting edges, a pair of blade strips each having a length substantially equal to that of the blade and a width less than half that of the blade and each sharpened along one longitudinal edge only, and means securing the two blade strips to the blade with the blade strips lying in a plane parallel to but spaced from that of the blade and disposed symmetrically on opposite sides of the longitudinal centre line of the blade with their sharpened edges directed outwardly and extending parallel to the sharpened edges of the blade, the distance between the cutting edge of each blade strip and the longitudinal centre line of the blade differing significantly from the distance between each cutting edge of the blade and the said centre line. 105 110 115 120

2. A blade unit in accordance with claim 1, in which the plane of the blade strips is spaced from the plane of the blade by a distance of from 0.008 to 0.020 inch, and in which the distance between the cutting edge of each blade strip and the longitudinal 125

centre line of the blade differs from the distance between each cutting edge of the blade and the said centre line by from 0.027 to 0.050 inch.

5 3. A blade unit in accordance with claim 1 or 2 in which the overall width of the blade between its cutting edges is from 0.925 to 0.950 inch and the cutting edge of each blade strip is spaced inwardly from the adjacent cutting edge of the blade.

10 4. A blade unit in accordance with claim 1 or 2 in which the overall width of the blade between its cutting edges is from 0.860 to 0.868 inch and the cutting edge of each blade strip is spaced outwardly from the adjacent cutting edge of the blade.

15 5. A blade unit in accordance with any of the preceding claims in which the means securing the two blade strips to the blade comprise a pair of spacer strips each interposed between the adjacent faces of the blade and a respective one of the blade strips and bonded to both of said faces, the outer edge of each spacer strip being spaced in-

wardly from the nearer of the adjacent cutting edges by a distance of at least 0.020 inch.

6. A blade unit in accordance with claim 5 in which the spacer strips are of metal and are spot welded to the blade and the blade strips.

7. A blade unit in accordance with claim 5 in which the spacer strips are of plastics material and are bonded to the blade and the blade strips by water-resistant adhesive.

8. A blade unit in accordance with any of the preceding claims in which the thickness of the blade strips is significantly less than that of the blade.

9. A disposable blade unit for a safety razor substantially as herein described with reference to the accompanying drawings.

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COMPLETE SPECIFICATION

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